EXPLANATION OF SURVEY DATA TABLES

The geoduck survey data for each tract is reported in five computer generated tables. These tables contain specific information gathered from transect and dig surveys. The following is an explanation of the headings and codes used in these tables.

Tract Summary

This table is a general summary of survey information for the geoduck tract; *Tract Size* in acres, average geoduck *Density*, *Total Pounds* with statistical confidence, and estimated *Total Number* of geoducks. Size estimators are reported in average values for *Whole Weight* and *Siphon Weight* in pounds. Quality estimators of geoduck samples are reported in *Siphon Weight as a percentage of Whole Weight* and percentage of samples *Over Two Pounds*. Any post-survey harvest information listed is derived from fish receiving tickets and new biomass estimates are survey estimates adjusted for harvest subsequent to the survey.

Digging Difficulty

This table presents a station-by-station evaluation of the factors contributing to the difficulty of digging geoduck samples with a 5/8" inside nozzle diameter water jet. Codes for the overall subjective summary of the digging difficulty are given in the *Difficulty* column. An explanation of the codes for the dig difficulty follows:

Code	Degree of Difficulty	Description
0	Very Easy	Sediment conducive to quick harvest.
1	Easy	Significant barrier in substrate to inhibit digging.
2	Some difficulty	Substrate may be compact or contain gravel, shell or clay; most geoducks still easy to dig.
3	Difficult	Most geoducks were difficult to dig, but most attempts were successful.
4	Very Difficult	It was laborious to dig each geoduck. Unable to dig some geoducks.
5	Impossible	Divers could not remove geoducks from the substrate.

Abundance refers to the relative geoduck abundance; a zero (0) indicates that geoducks were very sparse, a one (1) indicates that they were moderately abundant and a two (2) indicates that they were very abundant. *Depth* refers to the depth that the geoducks were found in the substrate. A zero (0) indicates that they were shallow, a one (1) indicates that they were moderately deep and a two (2) indicates that they were very deep. The columns labeled *Compact, Gravel, Shell, Turbidity* and *Algae* refer to factors that contribute to digging difficulty by interfering with the digging process. A zero (0) in one of these columns indicates that the factor was not a problem, a one (1) indicates that the

factor caused moderate difficulty and a two (2) indicates that the factor caused a significant amount of difficulty when digging. *Compact* refers to the compact or sticky nature of a muddy substrate. *Gravel* and *Shell* refer to the difficulty caused by these substrate types. *Turbidity* refers to the turbidity within the water near the dig hole caused by the digging activity. High turbidity makes it difficult to find the geoduck siphon shows. The difficulty of digging associated with turbidity varies with the amount of tidal current present. Therefore, the turbidity rating refers only to the conditions occurring when the sample was collected. *Algae* refers to algal cover, which also makes it difficult for the diver to find geoduck siphon shows. Because algal cover varies seasonally, this value only applies to the conditions when the sample was collected. The *Commercial* column gives a subjective assessment of whether or not it would be feasible to harvest geoducks on a commercial basis at the given station. A "checked" check box indicates yes, it would be feasible and a "blank" check box indicates it would not.

Water Depths, Geoduck Density and Substrate Observations

This table reports findings for each transect. *Start Depth* and *End Depth* (corrected to MLLW) are given for each transect. *Geoduck Density* is reported as the average number of geoducks per square foot for each 900 square foot transect. *Substrate Type* and *Substrate Rating* refer to evaluations of the substrate surface. A two (2) rating indicates that the substrate type predominated. A one (1) rating indicates the substrate type was present.

Size and Quality

This table summarizes the size and quality of the geoducks at each of the stations where dig samples were collected. Weight values for any geoduck dig samples that were damaged during sampling to the extent that water loss occurred, are excluded from calculations. The *Number Dug* column lists the number of geoducks collected. The *Ave. Whole Weight (lbs.)* column gives the average sample weight of whole geoduck clams. The *Ave. Siphon Weight (lbs.)* column gives the average weight of the siphons of the geoducks in the sample. The percentage of geoducks greater than two pounds is given in the *% Greater than 2 lbs.* column. A "blank cell" in any column indicates that the parameter is not available because the parameter was not measured or the data was not available for that station.

Transect Corrected Count and Position Table

This table reports the *Corrected Count*, the *Show Factor* used to correct the count, and the *Latitude/Longitude* position of the start point of survey transect. Counts are "corrected" by dividing diver counts (raw counts) with a siphon show factor (See WDFW Tech. Report FPT00-01 for explanation of show factor). Transect positions are reported in decimal minutes to the thousandth of a minute.

Last Updated: 25 January 2001
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TABLE 1: TRACT SUMMARY

TRACT NAME	Mahnckes 2-4
TRACT SIZE (ACRES)*	103
DENSITY OF GEOS/SQFT**	0.08
TOTAL POUNDS OF GEODUCKS**	958,207
TOTAL NUMBER OF GEODUCKS**	350,573
CONFIDENCE INT. AS %	30%
MEAN WT/GEODUCK (LBS)	2.73
MEAN SIPHON WEIGHT (LBS)	0.55
SIPHON WT AS % OF WHOLE WT	20.0%
% OVER 2 LBS	76%
NUMBER OF 900 SQ.FT STATIONS	37
NUMBER OF GEODUCKS WEIGHED	71

* Acreage based on DNR map using a combination of NOAA and
DNR mapped contours. This updated acreage is only the area available
for non-Indian harvest and is smaller than acreage listed in the 2002 Geoduck Atlas.

** Biomass based on year 2000 pre-fishing survey information and subtraction
of harvest (1,381,647 pounds) through 12/31/02.

Generation Date:	September 10, 2003
Generated By:	B. Sizemore
File:	Table 1.Mahnckes2-4.2003.state tract.xls

Table 2: Mahnckes 2-4 (#12950) 2000 Survey

Digging Difficulty Table

Dig Station #	Difficulty	Abundance	Depth	Compact	Gravel	Shell	Turbidity	Algae	Commercial
12	2	1	1	2	0	0	1	0	☑
20	2	1	1	2	0	0	1	1	☑
21	2	1	1	1	0	0	1	1	☑
31	2	2	1	1	0	1	1	0	☑
36	3	1	1	1	0	0	1	0	☑
45	2	2	0	1	0	0	1	0	☑
50	3	1	2	1	0	0	1	0	☑
56	1	2	1	0	0	0	1	0	☑

Table 3: Mahnckes 2-4 (#12950)
2000 Survey
Transect Water Depths, Geoduck Density, and Substrate Observations Table

Transect #	Start Depth*	End Depth*	Geoduck Density**	Substrate Type	Substrate Rating
9	56	63	0.0563		
				mud	2
11	36	46	0.0607		
				mud	2
12	46	55	0.0904		
				mud	2
13	55	60	0.1333		
				mud	2
14	60	57	0.0933		
				mud	2
16	30	37	0.0519		
				mud	2
				sand	1
17	37	40	0.0741		
				mud	2
				sand	1
18	40	42	0.0681		
				mud	2
				sand	1
19	42	47	0.0844		
				mud	2
				sand	1
20	47	55	0.1185	—	
				mud	2
				sand	1

Transect #	Start Depth*	End Depth*	Geoduck Density**	Substrate Type	Substrate Rating
21	20	30	0.0459		
				sand	2
				mud	1
22	31	39	0.1289		
				mud	2
				sand	1
23	39	47	0.3289		
				mud	2
				sand	1
24	47	60	0.5289		
				mud	2
				sand	1
26	27	48	0.1244		
				sand	2
				mud	1
27	48	65	0.3511		
				mud	2
				sand	1
29	47	62	0.3496		
				mud	1
				sand	1
31	51	63	0.1896		
				sand	2
				mud	1
33	46	58	0.0948		
				sand	2
				mud	1
36	43	50	0.0948		
				sand	2
				mud	1

Transect #	Start Depth*	End Depth*	Geoduck Density**	Substrate Type	Substrate Rating
37	51	53	0.1052		
				sand	2
				mud	1
38	53	54	0.3674		
				sand	2
				mud	1
39	54	60	0.1541		
				sand	2
				cobble	1
				gravel	1
				mud	1
				shell	1
				shellhash	1
40	60	61	0.04		
				cobble	1
				gravel	1
				mud	1
				sand	1
				shell	1
				shellhash	1
43	40	47	0.1556		
				sand	2
				mud	1
44	47	49	0.0652		
				sand	2
				mud	1
45	49	49	0.363		
				sand	2
				mud	1

Transect #	Start Depth*	End Depth*	Geoduck Density**	Substrate Type	Substrate Rating
46	49	53	0.3867		
				sand	2
				cobble	1
				gravel	1
				mud	1
				shell	1
47	41	60	0.0904		
				sand	2
				mud	1
				shell	1
48	59	64	0.0119		
				mud	1
				shell	1
				shellhash	1
				boulder	1
				gravel	1
				hummocks	1
50	21	28	0.1185		
				sand	2
				mud	1
55	32	44	0.1037		
				mud	1
				sand	1
56	44	57	0.3467		
				sand	1
				mud	1
57	57	52	0.7185		
				mud	1
				sand	1
58	52	43	0.483		
				mud	1
				sand	1

Transect #	Start Depth*	End Depth*	Geoduck Density**	Substrate Type	Substrate Rating
68	61	49	0.4741		
				mud	1
				sand	1
83	38	51	0.0015		
				gravel	2
				shell	1
				cobble	1
				sand	1

n	37
Mean Density (geos./sq.ft.)	0.1906
Variance	0.0295

* Water depths are corrected to mean lower low water (MLLW)

** Density estimates are calculated using a 0.75 show factor

Substrate Rating "1" = Present

Substrate Rating "2" = Predominant

Generation Date: 5 April, 2001

Generated By: M. Ulrich

File: D:/Datayear/2000/dbGeoduckSurveyApplications.2000.mdb rptTable3Mahnckes2-4State

Table 4: Mahnckes2-4 (#12950)
2000 Survey

Size and Quality Table

Dig Station #	Number Dug	Avg. Whole Weight (lbs.)	Avg. Siphon Weight (lbs.)	% Greater than 2 lbs.
12	8	2.31	0.45	75%
20	9	2.07	0.39	44%
21	7	2.30	0.35	86%
31	9	3.16	0.52	100%
36	8	3.11	0.84	75%
45	10	2.32	0.42	60%
50	11	3.17	0.64	82%
56	9	3.31	0.74	89%

Table 5: Mahnckes2-4 (#12950)
2000 Survey

Transect Corrected Geoduck Count and Position Table

Transect #	Corrected Count	Show Factor *	Latitude **	Longitude **
9	51	0.75	47 ° 12.517 '	122 ° 44.031 '
11	55	0.75	47 ° 12.593 '	122 ° 44.018 '
12	81	0.75	47 ° 12.593 '	122 ° 43.982 '
13	120	0.75	47 ° 12.576 '	122 ° 43.951 '
14	84	0.75	47 ° 12.566 '	122 ° 43.919 '
16	47	0.75	47 ° 12.643 '	122 ° 43.977 '
17	67	0.75	47 ° 12.647 '	122 ° 43.942 '
18	61	0.75	47 ° 12.648 '	122 ° 43.910 '
19	76	0.75	47 ° 12.639 '	122 ° 43.871 '
20	107	0.75	47 ° 12.633 '	122 ° 43.841 '
21	41	0.75	47 ° 12.706 '	122 ° 43.923 '
22	116	0.75	47 ° 12.693 '	122 ° 43.892 '
23	296	0.75	47 ° 12.684 '	122 ° 43.855 '
24	476	0.75	47 ° 12.680 '	122 ° 43.820 '
26	112	0.75	47 ° 12.747 '	122 ° 43.819 '
27	316	0.75	47 ° 12.738 '	122 ° 43.787 '
29	315	0.75	47 ° 12.788 '	122 ° 43.742 '
31	171	0.75	47 ° 12.866 '	122 ° 43.610 '
33	85	0.75	47 ° 12.921 '	122 ° 43.508 '
36	85	0.75	47 ° 13.001 '	122 ° 43.379 '
37	95	0.75	47 ° 12.991 '	122 ° 43.346 '
38	331	0.75	47 ° 12.982 '	122 ° 43.313 '
39	139	0.75	47 ° 12.971 '	122 ° 43.281 '
40	36	0.75	47 ° 12.961 '	122 ° 43.249 '

Transect #	Corrected Count	Show Factor *	Latitude **	Longitude **
43	140	0.75	47 ° 13.050 '	122 ° 43.342 '
44	59	0.75	47 ° 13.040 '	122 ° 43.309 '
45	327	0.75	47 ° 13.030 '	122 ° 43.277 '
46	348	0.75	47 ° 13.018 '	122 ° 43.248 '
47	81	0.75	47 ° 12.926 '	122 ° 43.103 '
48	11	0.75	47 ° 12.927 '	122 ° 43.140 '
50	107	0.75	47 ° 13.114 '	122 ° 43.255 '
55	93	0.75	47 ° 12.905 '	122 ° 43.100 '
56	312	0.75	47 ° 12.895 '	122 ° 43.136 '
57	647	0.75	47 ° 12.884 '	122 ° 43.165 '
58	435	0.75	47 ° 12.870 '	122 ° 43.165 '
68	427	0.75	47 ° 12.708 '	122 ° 43.252 '
83	1	0.75	47 ° 13.007 '	122 ° 43.056 '

* Show Factor used to correct combined geoduck counts

** Latitude/Longitude positions taken in North American Datum 1927 (NAD27)

Generation Date: 5 April, 2001

Generated By: M. Ulrich

File: D:/Datayear/2000/dbGeoduckSurveyApplications.2000.mdb rptTable5Mahnckes2-4State

TABLE 1: TRACT SUMMARY (#10000)

TRACT NAME	Point Heyer
TRACT SIZE (ACRES)	123
DENSITY OF GEOS/SQFT*	0.108
TOTAL POUNDS OF GEODUCKS*	1,260,772
TOTAL NUMBER OF GEODUCKS*	578,363
CONFIDENCE INT. AS %	19.10
MEAN WT/GEODUCK (LBS)	2.18
MEAN SIPHON WEIGHT (LBS)	0.54
SIPHON WT AS % OF WHOLE WT	24.57
% OVER 2 LBS	54
NUMBER OF 900 SQ.FT STATIONS	53
NUMBER OF GEODUCKS WEIGHED	92

Note: The figures above only reflect data taken seaward of a line 200 yards from OHT.
*Figures subtract harvest of 1,181,228 pounds from prefishing estimate of 2,442,256 pounds.

Generation Date:	August 18, 2004
Generated by:	B. Sizemore
File:	04_EAPtHeyer_#10000.wb2

POINT HEYER TRACT

TABLE 2: SUMMARY OF DIG STATION CHARACTERISTICS

Station	Difficulty	Abundance	Depth	Compact	Gravel	Shell	Turbidity	Algae	Commercial
5	0	2	1	0	0	0	1	0	Y
9	2	1	1	0	0	0	1	0	Y
14	2	1	1	1	1	2	1	0	Y
26	1	2	1	1	0	1	1	0	Y
31	1	1	1	0	0	1	1	0	Y
35	0	2	0	1	0	0	1	0	Y
40	1	1	1	0	0	0	1	0	Y
45	0	1	1	0	0	0	1	0	Y
60	1	1	1	0	1	0	1	0	Y

TABLE 3: WATER DEPTHS, SUBSTRATE OBSERVATIONS, AND GEODUCK DENSITIES

Station	Minimum Water Depth	Maximum Water Depth	Mud	Sand	Pea Gravel	Gravel	Shell	Cobble	Boulder	Geoduck Density #/Sq. Ft.
3	46	52	1	2						0.028
4	52	59	1	2						0.184
5	59	64	1	2						0.249
6	65	64	1	2						0.264
7	64	53		2						0.252
8	53	41	1	2						0.148
9	19	43		2						0.041
10	43	59	1	2						0.302
11	59	65	1	2						0.249
12	65	60	1	2						0.246
13	60	53	1	2						0.204
14	52	40	1	2						0.090
20	56	61	1	2						0.234
23	41	51		2						0.264
24	51	59		2						0.356
25	59	59		2						0.388
26	60	54		2						0.477
27	54	47		2						0.356
28	47	40		2						0.167
29	40	33		2						0.113
30	18	25		2						0.015
31	25	32		2						0.031
32	32	41		2						0.068
33	41	49		2						0.194
34	49	56		2						0.464
35	57	63		2						0.409
36	63	68		2						0.316
37	68	61		2						0.332
38	18	27		2						0.009
39	27	36		2						0.024
40	36	46		2						0.253
41	46	56		2						-0.329
42	56	64		2						0.324
43	18	26		2						0.003
44	26	36		2						0.013
45	36	45		2						0.159
46	45	55		2						0.298
47	55	59		2						0.240
48	60	55		2						0.267
49	55	48		2						0.284
50	48	41		2						0.219
51	42	35		2						0.074
52	18	27		2						0.007
53	27	36		2						0.010
54	36	45		2						0.130
55	46	55		2						0.258

TABLE 3: WATER DEPTHS, SUBSTRATE OBSERVATIONS, AND GEODUCK DENSITIES

Station	Minimum Water Depth	Maximum Water Depth	Mud	Sand	Pea Gravel	Gravel	Shell	Cobble	Boulder	Geoduck Density #/Sq. Ft.
56	55	63			2					0.261
57	63	60			2					0.262
58	60	53			2					0.305
59	53	42			2					0.397
60	42	34			2					0.113
61	34	24			2					0.015
65	49	58			2					0.236
66	58	67			2					0.351

N	54
Mean	0.2089
Variance	0.0168

Generation Date: 05/13/99
Generated by: M. Ulrich
File: 99EAPtHeyer.wb2

POINT HEYER TRACT

TABLE 4: SUMMARY OF DIG STATIONS

Station	Number Dug	Whole Wt. (lbs)	Siphon Wt. (lbs)	More than 2 lbs (%)
5	9	1.60	0.33	11
9	10	3.64	0.94	100
14	12	1.98	0.51	67
26	11	1.66	0.42	27
31	10	2.61	0.60	70
35	10	1.79	0.34	40
40	10	2.04	0.60	60
45	10	2.55	0.66	70
60	10	1.76	0.43	40

Generation Date: 05/13/99
Generated by: M. Ulrich
File: 99EAPtHeyer.wb2